

Form PTO-1449

ATTY DOCKET NO.: 1-00

SERIAL NO.: 09/815,296

FILING DATE: March 21, 2001

APPLICANT: Kiessling et al.

GROUP: 1614

## U.S. PATENT DOCUMENTS

Exmr. Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	1	6,291,616	09/18/01	Kiessling et al.	526	171	
	2	6,271,315	08/07/01	Kiessling et al.	525	326.1	
	3	5,587,442	12/24/96	Kiessling et al.	526	238.2	

previously  
considered

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes/No
	4	WO98/46270	10/22/98	PCT	A61K	47/48	
	5	WO9966944	12/29/99	PCT	A61K	38/00	
	6	WO98/47002	10/22/98	PCT	G01N	33/543	

previously  
considered

## OTHER PRIOR ART (including Author, Title, Date, Pertinent Pages, etc.)

my	7	Adler, J. (1966), "Chemotaxis in bacteria," <i>Science</i> 153:708-716
4	8	Adler, J. (1973), "A method for measuring chemotaxis and use of the method to determine optimum conditions for chemotaxis by <i>Escherichia coli</i> ," <i>J. Gen. Microbiol.</i> 74:77-91
✓	9	Adler, J. et al., (September 1973), "Chemotaxis towards sugars in <i>Escherichia coli</i> ," <i>J. Bacteriol.</i> 115:824-847
4	10	Alon, U. et al., (January 1999), "Robustness in bacterial chemotaxis," <i>Nature</i> 397:168-171
✓	11	Amsler, C.D. (1996), "Use of computer-assisted motion analysis for quantitative measurements of swimming behavior in peritrichously flagellated bacteria," <i>Anal. Biochem.</i> 235:20-25
✓	12	Arimoto, H. et al., (July 1999), "Multi-valent polymer of vancomycin: Enhanced antibacterial activity against VRE," <i>Chem. Comm.</i> 15:1361-1362
✓	13	Barkai, N. and Leibler, S., (1997), "Robustness in simple biochemical networks," <i>Nature</i> 387:913-917

←

M...

6/1/05

RECEIVED

OCT 15 2002

TECH CENTER 1600/2900

Form PTO-1449

ATTY DOCKET NO.: 1-00

SERIAL NO.: 09/815,296

FILING DATE: March 21, 2001

APPLICANT: Kiessling et al.

GROUP: 1614



✓	14	Barnakov, A.N. et al., (1994), "Studies of the structural organization of a bacterial chemoreceptor by electron microscopy," <i>J. Struct. Biol.</i> 112:117-124
✓	15	Ballerstadt, R. and Schultz, J.S., (1997), "Competitive-binding assay method based on fluorescence quenching of ligands held in close proximity by a multivalent receptor," <i>Anal. Chimica Acta</i> 345:203-212
✓	16	Berg, H.C. and Brown, D.A., (October 1972), "Chemotaxis in <i>Escherichia coli</i> analysed by three-dimensional tracking," <i>Nature</i> 239:500-504
✓	17	Blasioli, J. et al., (Jan. 1999), "Definition of the Sites of Interaction between the Protein Tyrosine Phosphatase SHP-1 and CD22," <i>J. Biol. Chem.</i> 274(4):2303-2307
✓	18	Boos, W., (1969), "The galactose binding protein and its relationship to the $\beta$ -methylgalactoside permease from <i>Escherichia coli</i> ," <i>Eur. J. Biochem.</i> 10:66-73
✓	19	Bray, D. et al., (May 1998), "Receptor clustering as a cellular mechanism to control sensitivity," <i>Nature</i> 393:85-88
✓	20	Burke, S.D. et al., (April 2000), "Synergistic formation of soluble lectin clusters by a templated multivalent saccharide ligand," <i>J. Am. Chem. Soc.</i> 122(18):4518-4519
✓	21	Cochran, A.G. and Kim, P.S., (February 1996), "Imitation of <i>Escherichia coli</i> aspartate receptor signaling in engineered dimers of the cytoplasmic domain," <i>Science</i> 271:1113-1116
✓	22	Coloma, M.J. and Morrison, S.L., (February 1997), "Design and production of novel tetravalent bispecific antibodies," <i>Nature Biotechnol.</i> 15:159-163
✓	23	Crothers, D.M. and Metzger, H., (1972), "The influence of polyvalency on the binding properties of antibodies," <i>Immunochem.</i> 9:341-357
✓	24	Dintzis, R.Z. et al., (August 1989), "The immunogenicity of soluble haptenated polymers is determined by molecular mass and hapten valence," <i>J. Immunol.</i> 143(4):1239-1244
✓	25	Duke, T.A.J. and Bray, D., (August 1999), "Heightened sensitivity of a lattice of membrane receptors," <i>Proc. Natl. Acad. Sci. USA</i> 96(18):10104-10108
✓	26	Fire, E. et al., (November 1997), "Partitioning of proteins into plasma membrane microdomains: clustering of mutant influenza virus hemagglutinins into coated pits depends on the strength of the internalization signal," <i>J. Biol. Chem.</i> 272(47):29538-29545

RECEIVED

OCT 15 2002

TECH CENTER 1600/2900



Form PTO-1449		
ATTY DOCKET NO.: 1-00	SERIAL NO.: 09/815,296	FILING DATE: March 21, 2001
APPLICANT: Kiessling et al.		GROUP: 1614

me	27	Furata, M. et al., (March 1998), "Construction of mono- and bivalent human single-chain Fv fragments against the D antigen in the Rh blood group: Multimerization effect on cell agglutination and application to blood typing," <i>Protein Eng.</i> 11(3):233-241
✓	28	Gapin, L. et al., (February 1998), "Antigen presentation by dendritic cells focuses T cell responses against immunodominant peptides: studies in the hen egg-white lysozyme (HEL) model," <i>J. Immunology</i> 160:1555-1564
✓		Germain, R.N., (1997), "T-cell signaling: The importance of receptor clustering," <i>Curr. Biol.</i> 7:R640-R644
✓	29	Gestwicki, J.E. et al., (December 2000), "Visualization of single multivalent receptor-ligand complexes by transmission electron microscopy," <i>Angew. Chem. Int. Ed.</i> 39(24):4567-4570
✓	30	Gibson, V.C. et al., (1997), "Thymine functionalised polymers via living ring-opening metathesis polymerisation," <i>J. Chem. Soc., Chem. Commun.</i> 1095-1096
✓	31	Gordon, E.J. et al., (March 1998), "Synthetic ligands point to cell surface strategies," <i>Nature</i> 392:30-31
✓	32	Gordon, E.J. et al., (January 2000), "Synthesis of end-labeled multivalent ligands for exploring cell-surface-receptor-ligand interactions," <i>Chem. Biol.</i> 7:9-16
✓	33	Grebe, T.W. and Stock, J., (February 1998), "Bacterial chemotaxis: The five sensors of a bacterium," <i>Curr. Biol.</i> 8:R154-R157
✓	34	Gupta, D. et al., (March 1997), "Thermodynamics of lectin-carbohydrate interactions: Binding of the core trimannoside of asparagine-linked carbohydrates and deoxy analogs to concanavalin A," <i>J. Biol. Chem.</i> 272(10):6388-6392
✓	35	Hart, D.J. et al., (1987), "Total Synthesis of (±)-Lythrancepine II and (±)-Lythrancepine III," <i>J. Org. Chem.</i> 52:4665-4673
✓	36	Hato, T. et al., (June 1998), "Complementary roles for receptor clustering and conformational change in the adhesive and signaling functions of integrin $\alpha_{\text{m}}\beta_1$ ," <i>J. Cell Biol.</i> 141(7):1685-1695
✓	37	Hazelbauer, G.L. and Adler, J., (March 1971), "Role of the galactose binding protein in chemotaxis of <i>Escherichia coli</i> toward galactose," <i>Nature New Biol.</i> 230:101-104
✓	38	Hazelbauer, G.L. et al., (April 1993), "Bacterial motility and signal transduction," <i>Cell</i> 73:15-22

me 6/1/05

RECEIVED

OCT 15 2002

TECH CENTER 1600/2900



Sheet 4 of 8

Form PTO-1449		
ATTY DOCKET NO.: 1-00	SERIAL NO.: 09/815,296	FILING DATE: March 21, 2001
APPLICANT: Kiessling et al.		GROUP: 1614

	39	Heldin, C.H. (January 1995), "Dimerization of cell surface receptors in signal transduction," <i>Cell</i> 80:213-223
	40	Holowka, D. and Baird, B., (1996), "Antigen-mediated IgE receptor aggregation and signaling: A window on cell surface structure and dynamics." <i>Annu. Rev. Biophys. Biomol. Struct.</i> 25:79-112
	41	Hudson, P.J. and Kortt, A.A., (December 1999), "High avidity scFv multimers; diabodies and triabodies," <i>J. Immunol. Methods</i> 231:177-189
	42	Hunig, S. et al., (April 1965), "The Chemistry of Diimine," <i>Angew. Chem. Int. Ed. Engl.</i> 4(4):271-382
	43	Jasuja, R. et al., (March 1999), "Chemotactic responses of Escherichia coli to small jumps of photoreleased L-aspartate," <i>Biophys. J.</i> 76(3):1706-1719
	44	Johnson, R.A., and Sharpless, K. B., (1993), "Catalytic Asymmetric Epoxidation of Allylic Alcohols" in <i>Catalytic Asymmetric Synthesis</i> Ojima, I. (ed) VCH:New York. 103-158
	45	Kanai, M. et al., (1997), "Varying the size of multivalent ligands: The dependence of concanavalin A binding on neoglycopolymer length," <i>J. Am. Chem. Soc.</i> 119(41):9931-9932
	46	Kaplan, M.R. et al., (1997), "Fluorescence Depolarization as an Early Measure of T Lymphocyte Stimulation," <i>J. Immunol. Methods</i> 201:15-24
	47	Kawauchi, H. et al., (1993), "Agglutinins from aquatic insects-tumor cell agglutination activity," <i>Experientia</i> 49(4):358-361
	48	Kemp, B.E. et al., (1988), "Autologous red cell agglutination assay for HIV-1 antibodies: Simplified test with whole blood," <i>Science</i> 241:1352-1354
	49	Khan, M.I. et al., (1991), "Interactions of concanavalin A with glycoproteins. A quantitative precipitation study of concanavalin A with the soybean agglutinin," <i>Carbohydr. Res.</i> 213:69-77
	50	Kiessling, L.L. and Pohl, N.L., (1996), "Strength in numbers: Non-natural polyvalent carbohydrate derivatives," <i>Curr. Biol.</i> 3(2):71-77
	51	Kiessling, L.L. and Strong, L.E. (September 1998), "Bioactive Polymers," <i>Top. Organomet. Chem.</i> , 1:200-231 <i>shows only add number</i>
	52	Kiss et al., (1997), "In vitro influence of <i>Phaseolus vulgaris</i> , <i>Griffonia simplicifolia</i> , concanavalin A, wheat germ, and peanut agglutinins on HCT-15, LoVo, and SW837 human colorectal cancer cell growth," <i>Gut</i> 40:253-261

51

56

57  
d pages

61108

RECEIVED

OCT 15 2002

TECH CENTER 1600/2900

Form PTO-1449		
ATTY DOCKET NO.: 1-00	SERIAL NO.: 09/815,296	FILING DATE: March 21, 2001
APPLICANT: Kiessling et al.		GROUP: 1614



✓	53	Klemm, J.D. et al., (April 1998), "Dimerization as a regulatory mechanism in signal transduction," <i>Annu. Rev. Immunol.</i> 16:569-592
✓	54	Kramer, R.H. and Karpen, J.W., (October 1998), "Spanning binding sites on allosteric proteins with polymer-linked ligand dimers," <i>Nature</i> 395:710-713
✓	55	Kuduk, S.D. et al., (November 1998), "Synthetic and immunological studies on clustered modes of mucin-related Tn and TF O-linked antigens: The Preparation of a glycopeptide-based vaccine for clinical trials against prostate cancer," <i>J. Am. Chem. Soc.</i> 120(48):12474-12485
✓	56	Lees, A. et al., (1990), "Rapid stimulation of large specific antibody responses with conjugates of antigen and anti-IgD antibody," <i>J. Immunol.</i> 145:3594-3600
✓	57	Leive, L. and Kollin, V., (1967), "Controlling EDTA treatment to produce permeable <i>Escherichia coli</i> with normal metabolic processes," <i>Biochem. Biophys. Res. Comm.</i> 28:229-236
✓	58	Levit, M. N. et al., (November 1998), "Stimulus response coupling in bacterial chemotaxis: receptor dimers in signaling arrays," <i>Mol. Microbiol.</i> 30(3):459-466
✓	59	Li, G. and Weis, R.M., (February 2000), "Covalent modification regulates ligand binding to receptor complexes in the chemosensory system of <i>Escherichia coli</i> ," <i>Cell</i> 100:357-365
✓	60	Lou, D. and Kohler, H. (May 1998), "Enhanced molecular mimicry of CEA using photoaffinity crosslinked C3d peptide," <i>Nature Biotechnology</i> 16:458-462
✓	61	Lynn, D.M. et al., (1996), "Living ring-opening metathesis polymerization in aqueous media catalyzed by well-defined ruthenium carbene complexes," <i>J. Am. Chem. Soc.</i> 118:784-790
✓	62	Maddock, J.R. and Shapiro, L. (March 1993), "Polar location of the chemoreceptor complex in the <i>Escherichia coli</i> cell," <i>Science</i> 259:1717-1723
✓	63	Mammen, M. et al., (November 1998), "Polyvalent interactions in biological systems: implications for design and use of multivalent ligands and inhibitors," <i>Angew. Chem. Int. Ed.</i> 37:2755-2794
✓	64	Manning, D.D. et al., (1997), "Neoglycopolymer inhibitors of the selectins," <i>Tetrahedron</i> 53(35):11937-11952
✓	65	Matsuya, Y. and Yamane, I., (1985), "Cell hybridization and cell agglutination 1. Enhancement of cell hybridization by lectins," <i>J. Cell Sci.</i> 78:263-271

RECEIVED

OCT 15 2002

TECH CENTER 1600/2900

Form PTO-1449		
ATTY DOCKET NO.: 1-00	SERIAL NO.: 09/815,296	FILING DATE: March 21, 2001
APPLICANT: Kiessling et al.		GROUP: 1614



✓	66	Mesibov, R. et al., (1973), "The range of attractant concentrations for bacterial chemotaxis and the threshold and size of response over this range," <i>J. Gen. Physiol.</i> 62:203-223
✓	67	Metzger, H. (1992), "Transmembrane signaling: The joy of aggregation," <i>J. Immunol.</i> 149(5):1477-1487
✓	68	Monks, C.R.F. et al., (September 1998), "Three-dimensional segregation of supramolecular activation cluster in T-cell," <i>Nature</i> 395:82-86
✓	69	Moudgil, K. et al., (1997), "Immunodominance is independent of structural constraints," <i>J. Immunology</i> 159(6):2574-2579
✓	70	Ordal, G.W. et al., (1979), "Chemotaxis towards sugars by <i>Bacillus subtilis</i> ," <i>J. Gen. Microbiol.</i> 115:167-172
✓	71	Ordal, G.W. (1985), "Bacterial chemotaxis: Biochemistry of behavior in a single cell," <i>CRC Critical Rev. Microbiol.</i> 12(2):95-130
✓	72	Osawa, T. and Beppu, M. (1987), "Cross-linked derivatives of concanavalin A," <i>Methods Enzymol.</i> 150:17-28
✓	73	Parkin, S. et al., (1996), "Atomic resolution structure of concanavalin A at 120K," <i>Acta Cryst. D</i> 52:1161-1168
✓	74	Parkinson, J.S., (June 1993), "Signal transduction schemes of bacteria," <i>Cell</i> 73:857-871
✓	75	Powell, L.D. and Varki, A. (1994), "The oligosaccharide binding specificities of CD22 $\beta$ , a sialic acid-specific lectin of B cells," <i>J. Biol. Chem.</i> 269(14):10628-10636
✓	76	Ramaschi, G. et al., (1993), "Intracellular Calcium Mobilization is Triggered by Clustering of Membrane Glycoproteins in Concanavalin A-stimulated Platelets," <i>Cell Biochem. Function</i> 11:241-249
✓	77	Rott, O. et al., (1996), "Influenza A Virus Hemagglutinin is a B-cell-superstimulatory Lectin," <i>Med. Microbiol. Immuno.</i> 184:185-193
✓	78	Sager, B.M. et al., (1988), "Use of a computer to assay motility in bacteria," <i>Anal. Biochem.</i> 173:271-277
✓	79	Sanders, W.J. et al., (1996), "L-selectin-carbohydrate interactions: Relevant modifications of the Lewis x trisaccharide," <i>Biochemistry</i> 35:14862-14867
✓	80	Schlessinger, J., (November 1988), "Signal transduction by allosteric receptor oligomerization," <i>TIBS</i> 13:443-447

*Handwritten signature* 6/1/05

RECEIVED

OCT 15 2002

TECH CENTER 1600/2900

Form PTO-1449		
ATTY DOCKET NO.: 1-00	SERIAL NO.: 09/815,296	FILING DATE: March 21, 2001
APPLICANT: Kiessling et al.		GROUP: 1614



✓	81	Segal, D.M. et al., (October 1999), "Bispecific antibodies in cancer therapy," <i>Curr. Opin. Immunol.</i> 11:558-562
✓	82	Sigal, G.B. et al., (April 1996), "Polyacrylamides bearing pendant α-sialoside groups strongly inhibit agglutination of erythrocytes by influenza virus: The strong inhibition reflects enhanced binding through cooperative polyvalent interactions," <i>J. Am. Chem. Soc.</i> 118(16):3789-3800
✓	83	Silversmith, R.E. and Bourret, R.B., (January 1999), "Throwing the switch in bacterial chemotaxis," <i>Trends Microbiol.</i> 7(1):16-22
✓	84	Singh, R.S. et al., (June 1999), "Lectins: Sources, Activities and Applications," <i>Crit. Rev. Biotech.</i> 19(2):145-178
✓	85	Spencer, D.M. et al., (November 1993), "Controlling signal transduction with synthetic ligands," <i>Science</i> 262:1019-1024
✓	86	Stewart, R. et al., (1996), "Lectins Implicate Specific Carbohydrate Domains in Electric Field Stimulated Nerve Growth and Guidance," <i>J. Neurobiol.</i> 30(3):425-437
✓	87	Stoddard, B.L. and Koshland, D.E.J., (1992), "Prediction of the structure of a receptor-protein complex using a binary docking method," <i>Nature</i> 358:774-776
✓	88	Strong, L.E. and Kiessling, L.L., (June 1999), "A general synthetic route to defined, biologically active multivalent arrays," <i>J. Am. Chem. Soc.</i> 121(26):6193-6196
✓	89	Takamatsu, H. et al., (March 1999), "Continuous antibody production by phytohemagglutinin-L-aggregated hybridoma cells," <i>J. Immunol. Methods</i> 223:165-170
✓	90	Tian, S.S. et al., (July 1998), "A small, nonpeptidyl mimic of granulocyte-colony-stimulating factor," <i>Science</i> 281(5374):257-281
✓	91	Torti, M. et al., (1995), "Dual mechanism of protein-tyrosine phosphorylation in concanavalin A-stimulated platelets," <i>J. Cell Biochem.</i> 57:30-38
✓	92	Walsh, P.J. et al., (1993), "Asymmetric Dihydroxylation (AD)/Cyclization of N-DiBoc Allylic and Homoallylic Amines: Selective Differentiation of the Hydroxyl Groups," <i>Tetrahedron Lett.</i> 34(35):5545-5548
✓	93	Walzel, H. et al., (February 2000), "Involvement of CD2 and CD3 in Galectin-I Induced Signaling in Human Jurkat T-cells," <i>Glycobiology</i> 10(2):131-140

87

94

RECEIVED

OCT 15 2002

TECH CENTER 1600/2900

Form PTO-1449		
ATTY DOCKET NO.: 1-00	SERIAL NO.: 09/815,296	FILING DATE: March 21, 2001
APPLICANT: Kiessling et al.		GROUP: 1614



<input checked="" type="checkbox"/>	94	Weis, W.I. et al., (July 1998), "The C-type lectin superfamily in the immune system," <i>Immunol. Rev.</i> 163:19-34
<input checked="" type="checkbox"/>	95	Weiss, A. and Schlessinger, J., (August 1998), "Switching signals on or off by receptor dimerization," <i>Cell</i> 94:277-280
<input checked="" type="checkbox"/>	96	Wenzel-Seifert, K. et al., (September 1996), "Concanavalin A and Mistletoe Lectin I Differentially Activate Cation Entry and Exocytosis in Human Neutrophils: Lectins May Activate Multiple Subtypes of Cation Channels," <i>J. Leukocyte Biol.</i> 60:345-355
<input checked="" type="checkbox"/>	97	Williams, L.T., (March 1989), "Signal transduction by the platelet-derived growth factor receptor," <i>Science</i> 243:1564-1570
<input checked="" type="checkbox"/>	98	Yaghamai, R. and Hazelbauer, G.L., (1993), "Strategies for differential sensory responses mediated through the same transmembrane receptor," <i>EMBO J.</i> 12(5):1897-1905
<input checked="" type="checkbox"/>	99	Yap, A.S. et al., (1997), "Lateral clustering of the adhesive ectodomain: a fundamental determinant of cadherin function," <i>Curr. Biol.</i> 7(5):308-315
<input checked="" type="checkbox"/>	100	Ye, R. D. and Boulay, F., (1997), "Structure and Function of Leukocyte Chemoattractant Receptors," <i>Advances in Pharmacology</i> 39:221-289
<input checked="" type="checkbox"/>	101	Zhang, Y. and et al., (February 1999), "Model of maltose-binding protein/chemoreceptor complex supports intrasubunit signaling mechanism," <i>Proc. Natl. Acad. Sci. USA</i> 96:939-944

EXAMINER

DATE CONSIDERED

6/1/05

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

12/20/89

RECEIVED

OCT 15 2002

TECH CENTER 1600/2900